What is Claimed is:

1. A method of determining the position of an emitter, comprising:

(a) detecting an emitted signal from the emitter at plural receiver communication devices positioned at different locations, the receiver communication devices determining respective detection times of the emitted signal in respective local time reference frames;

(b) determining respective timing differences between the respective local time reference frames of the receiver communication devices and a time reference frame of a reference communication device;

(c) accounting for the respective timing differences between the respective local time reference frames and the time reference frame of the reference communication device such that the respective detection times are determined in a common time reference frame; and

(d) determining a position of the emitter from known positions of the receiver communication devices and the respective detection times of the emitted signal.

2. The method of claim 1, wherein (b) includes exchanging time synchronization signals between the receiver communication devices and the reference communication device.

3. The method of claim 2, wherein (b) includes transmitting an outbound time synchronization signal from each of the receiver communication devices to the reference communication device and transmitting a reply time synchronization signal from the reference communication device to each of the receiver communication devices.

4. The method of claim 3, wherein the reply time synchronization signal indicates a time of arrival of the outbound time synchronization signal at the reference communication device in the common time reference frame.

5. The method of claim 2, wherein (b) includes determining a signal propagation time between each of the receiver communication devices and the reference communication device from a round-trip signal propagation time of the outbound time synchronization signal and the reply time synchronization signal.

6. The method of claim 5, wherein (b) includes determining each of the respective timing differences from a time of transmission of the outbound time synchronization signal, a

time of arrival of the outbound time synchronization signal at the reference communication device, and the signal propagation time.

7. The method of claim 2, wherein (b) includes exchanging time synchronization signals between the receiver communication devices and the reference communication device using a Carrier Sense Multiple Access with Collision Avoidance (CSMA/CA) protocol.

8. The method of claim 2, wherein (b) includes exchanging time synchronization signals between the receiver communication devices and the reference communication device using spread spectrum waveforms.

9. The method of claim 1, wherein (c) includes adjusting the respective detection times by the respective timing differences between the respective local time reference frames and the time reference frame of the reference communication device.

10. The method of claim 1, wherein (c) includes adjusting the respective local time reference frames by the respective timing differences to synchronize the respective local time reference frames with the common time reference frame.

11. The method of claim 1, wherein (c) includes accounting for the respective timing differences between the respective local time reference frames and the time reference frame of the reference communication device upon detection of an emitted signal by respective receiver communication devices.

12. The method of claim 11, wherein (c) includes synchronizing the respective detection times with the common time reference frame each time an emitted signal is detected by respective receiver communication devices.

13. The method of claim 11, wherein (c) includes accounting for the respective timing differences when a predetermined period of time has elapsed since respective receiver communication devices last accounted for the respective timing differences.

14. The method of claim 1, wherein (c) includes accounting for the respective timing differences when an estimate accuracy of the respective local time reference frames is worse than a predetermined value.

15. The method of claim 1, wherein (c) includes periodically synchronizing the receiver communication devices with the reference communication device.

16. The method of claim 1, wherein the frequency with which the receiver communication devices account for the respective timing differences is a function of a level of activity in a communication network used to exchange signals between the receiver communication devices and the reference communication device.

17. The method of claim 1, wherein the receiver communication devices maintain the respective local time reference frames using low accuracy clocks.

18. The method of claim 1, wherein (a) includes detecting the emitted signal with at least three receiver communication devices.

19. The method of claim 1, wherein (d) includes:

sending signal detection information, including the respective detection times, from the receiver communication devices to a processor;

correlating the signal detection information from at least three of the receiver communication devices to a common emitted signal; and

determining the position of the emitter from known positions of the at least three receiver communication devices and the respective detection times of the common emitted signal using trilateration.

20. The method of claim 19, wherein the processor is coupled to one of the receiver communication devices.

21. The method of claim 19, wherein the processor is coupled to the reference communication device.

22. The method of claim 1, wherein the reference communication device is one of the receiver communication devices.

23. The method of claim 1, wherein at least some of the receiver communication devices are mobile.

24. The method of claim 1, wherein the reference communication device is mobile.

25. The method of claim 1, wherein the receiver communication devices are handheld radios.

26. The method of claim 1, wherein the receiver communication devices are wireless telephones.

27. The method of claim 1, wherein the receiver communication devices operate onboard a moving vehicle.

28. A communication device for determining a detection time of an emitted signal from an emitter, comprising:

a receiver device configured to detect the emitted signal, the detection time of the emitted signal being determined in a local time reference frame;

a transmitter configured to transmit an outbound time synchronization signal to a reference communication device, said receiver device being configured to receive a reply time synchronization signal from the reference communication device, the reply time synchronization signal indicating a time of arrival of the outbound time synchronization signal at the reference communication device in a time reference frame of the reference communication device; and

a processor configured to: determine a timing difference between the local time reference frame and the time reference frame of the reference communication device; and account for the timing difference such that the detection time of the emitted signal is determined in the time reference frame of the reference communication device.

29. The communication device of claim 28, wherein said receiver device comprises a first receiver for detecting the emitted signal from the emitter and a second receiver for receiving the reply time synchronization signal from the reference communication device.

30. The communication device of claim 28, wherein said processor determines a signal propagation time between said communication device and the reference communication device from a round-trip signal propagation time of the outbound time synchronization signal and the reply time synchronization signal.

31. The communication device of claim 30, wherein said processor determines the timing difference from a time of transmission of the outbound time synchronization signal, the time of arrival of the outbound time synchronization signal at the reference communication device, and the signal propagation time.

32. The communication device of claim 28, wherein said communication device exchanges time synchronization signals with the reference communication device using a Carrier Sense Multiple Access with Collision Avoidance (CSMA/CA) protocol.

33. The communication device of claim 28, wherein said communication device exchanges time synchronization signals with the reference communication device using spread spectrum waveforms.

34. The communication device of claim 28, wherein said processor adjusts the detection time of the emitted signal by the timing difference between the local time reference frame and the time reference frame of the reference communication device.

35. The communication device of claim 28, wherein said processor adjusts the local time reference frame by the timing difference to synchronize the local time reference frame with the time reference frame of the reference communication device.

36. The communication device of claim 28, wherein said processor accounts for the timing difference between the local time reference frame and the time reference frame of the reference communication device upon detection of the emitted signal.

37. The communication device of claim 36, wherein, each time an emitted signal is detected by said communication device, said processor synchronizes the detection time of the emitted signal with the time reference frame of the reference communication device.

38. The communication device of claim 28, wherein said processor accounts for the timing difference when a predetermined period of time has elapsed since the communication device last accounted for the timing difference.

39. The communication device of claim 28, wherein said processor accounts for the timing difference when an estimate accuracy of the local time reference frame is worse than a predetermined value.

40. The communication device of claim 28, wherein said communication device periodically synchronizes the local time reference frame with the time reference frame of the reference communication device.

41. The communication device of claim 28, wherein the frequency with which said communication device accounts for the timing difference is a function of a level of activity in a communication network used to exchange signals between said communication device and the reference communication device.

42. The communication device of claim 28, wherein said communication device further comprises a low accuracy clock that maintains the local time reference frame.

43. The communication device of claim 28, wherein said transmitter transmits emitter signal detection information, including the detection time of the emitted signal, to a position-determining processor configured to determine the position of the emitter.

44. The communication device of claim 28, wherein said communication device is mobile.

45. The communication device of claim 28, wherein said communication device is a handheld radio.

46. The communication device of claim 28, wherein said communication device is configured to be carried on a human body.

47. The communication device of claim 28, wherein said communication device is a wireless telephone.

48. The communication device of claim 28, wherein said communication device operates onboard a moving vehicle.

49. A communication device for determining a detection time of an emitted signal from an emitter, comprising:

first receiver means for detecting the emitted signal, the detection time of the emitted signal being determined in a local time reference frame;

means for transmitting an outbound time synchronization signal to a reference communication device;

second receiver means for receiving a reply time synchronization signal from the reference communication device, the reply time synchronization signal indicating a time of arrival of the outbound time synchronization signal at the reference communication device in a time reference frame of the reference communication device;

means for determining a timing difference between the local time reference frame and the time reference frame of the reference communication device; and

means for accounting for the timing difference such that the detection time of the emitted signal is determined in the time reference frame of the reference communication device.

50. The communication device of claim 49, wherein said first and second receiver means comprises a receiver capable of detecting both the emitted signal from the emitter and the reply time synchronization signal from the reference communication device.

51. The communication device of claim 49, wherein said means for determining determines a signal propagation time between said communication device and the reference communication device from a round-trip signal propagation time of the outbound time synchronization signal and the reply time synchronization signal.

52. The communication device of claim 51, wherein said means for determining determines the timing difference from a time of transmission of the outbound time synchronization signal, the time of arrival of the outbound time synchronization signal at the reference communication device, and the signal propagation time.

53. The communication device of claim 49, wherein said communication device exchanges time synchronization signals with the reference communication device using a Carrier Sense Multiple Access with Collision Avoidance (CSMA/CA) protocol.

54. The communication device of claim 49, wherein said communication device exchanges time synchronization signals with the reference communication device using spread spectrum waveforms.

55. The communication device of claim 49, wherein said means for accounting adjusts the detection time of the emitted signal by the timing difference between the local time reference frame and the time reference frame of the reference communication device.

56. The communication device of claim 49, wherein said means for accounting adjusts the local time reference frame by the timing difference to synchronize the local time reference frame with the time reference frame of the reference communication device.

57. The communication device of claim 49, wherein said means for accounting accounts for the timing difference between the local time reference frame and the time reference frame of the reference communication device upon detection of the emitted signal.

58. The communication device of claim 57, wherein, each time an emitted signal is detected by said communication device, said means for accounting synchronizes the detection time of the emitted signal with the time reference frame of the reference communication device.

59. The communication device of claim 49, wherein said means for accounting accounts for the timing difference when a predetermined period of time has elapsed since the communication device last accounted for the timing difference.

60. The communication device of claim 49, wherein said means for accounting accounts for the timing difference when an estimate accuracy of the local time reference frame is worse than a predetermined value.

61. The communication device of claim 49, wherein said communication device periodically synchronizes the local time reference frame with the time reference frame of the reference communication device.

62. The communication device of claim 49, wherein the frequency with which said communication device accounts for the timing difference is a function of a level of activity in a communication network used to exchange signals between said communication device and the reference communication device.

63. The communication device of claim 49, wherein said communication device is mobile.

64. A reference communication device for establishing a common time reference frame among a plurality of receiver communication devices, comprising:

a receiver configured to receive outbound time synchronization signals transmitted by respective ones of said receiver communication devices, said reference communication device determining a time of arrival of the outbound time synchronization signals in the common time reference frame;

a transmitter configured to transmit reply time synchronization signals to said respective ones of said receiver communication devices, the reply time synchronization signals indicating the time of arrival of the respective outbound time synchronization signals at the reference communication device in the common time reference frame, thereby enabling said respective ones of the receiver communication devices to synchronize with the common time reference frame based on respective timing differences determined from the time of arrival of the respective outbound time synchronization signal at the reference communication device.

65. The reference communication device of claim 64, wherein said transmitter transmits the reply time synchronization signals at a predetermined turn-around time after arrival of the respective outbound time synchronization signals.

66. The reference communication device of claim 64, wherein said transmitter indicates in the reply time synchronization signals a time of transmission of the reply time synchronization signals.

67. The reference communication device of claim 64, wherein said transmitter indicates in the reply time synchronization signals a turn around time between the time of transmission of the reply time synchronization signals and the time of arrival of the respective outbound time synchronization signals.

68. The reference communication device of claim 64, wherein said reference communication device exchanges time synchronization signals with the receiver communication devices using a Carrier Sense Multiple Access with Collision Avoidance (CSMA/CA) protocol.

69. The reference communication device of claim 64, wherein said reference communication device exchanges time synchronization signals with the receiver communication devices using spread spectrum waveforms.

70. The reference communication device of claim 64, wherein said reference communication device further comprises a low accuracy clock that maintains the common time reference frame.

71. The reference communication device of claim 64, wherein said reference communication device is mobile.

72. A reference communication device for establishing a common time reference frame among a plurality of receiver communication devices, comprising:

means for receiving outbound time synchronization signals transmitted by respective ones of said receiver communication devices, said reference communication device determining a time of arrival of the outbound time synchronization signals in the common time reference frame;

means for transmitting reply time synchronization signals to said respective ones of said receiver communication devices, the reply time synchronization signals indicating the

time of arrival of the respective outbound time synchronization signals at the reference communication device in the common time reference frame, thereby enabling said respective ones of the receiver communication devices to synchronize with the common time reference frame based on respective timing differences determined from the time of arrival of the respective outbound time synchronization signal at the reference communication device.

73. The reference communication device of claim 64, wherein said means for transmitting transmits the reply time synchronization signals at a predetermined turn-around time after arrival of the respective outbound time synchronization signals.

74. The reference communication device of claim 64, wherein said means for transmitting indicates in the reply time synchronization signals a time of transmission of the reply time synchronization signals.

75. The reference communication device of claim 64, wherein said means for transmitting indicates in the reply time synchronization signals a turn around time between the time of transmission of the reply time synchronization signals and the time of arrival of the respective outbound time synchronization signals.

76. A system for determining the position of an emitter, comprising:

a reference communication device maintaining a time reference frame;

a plurality of receiver communication devices positioned at different locations and configured to detect an emitted signal from the emitter, the receiver communication devices determining respective detection times of the emitted signal in respective local time reference frames, said receiver communication devices exchanging time synchronization signals with said reference communication device to determine respective timing differences between the respective local time reference frames and the time reference frame of said reference communication device and accounting for the respective timing differences such that the respective detection times of the emitted signal at the receiver communication devices are in a common time reference frame; and

a processor configured to receive signal detection information from the receiver communication devices, including the respective detection times, said processor correlating the signal detection information from at least three of the receiver communication devices to a common emitted signal and determining a position of the emitter from known positions of

the receiver communication devices and the respective detection times of the common emitted signal.

77. The system of claim 76, wherein each of said receiver communication devices transmits an outbound time synchronization signal to the reference communication device and said reference communication device transmits a reply time synchronization signal to each of said receiver communication devices.

78. The system of claim 77, wherein the reply time synchronization signal indicates a time of arrival of the outbound time synchronization signal at the reference communication device in the time reference frame of the reference communication device.

79. The system of claim 77, wherein each of said receiver communication devices determines a signal propagation time to the reference communication device from a round-trip signal propagation time of the outbound time synchronization signal and the reply time synchronization signal.

80. The system of claim 79, wherein each of said receiver communication devices determines its respective timing difference from a time of transmission of the outbound time synchronization signal, a time of arrival of the outbound time synchronization signal at the reference communication device, and the signal propagation time.

81. The system of claim 76, wherein said receiver communication devices exchange time synchronization signals with the reference communication device using a Carrier Sense Multiple Access with Collision Avoidance (CSMA/CA) protocol.

82. The system of claim 76, wherein said receiver communication devices exchange time synchronization signals with the reference communication device using spread spectrum waveforms.

83. The system of claim 76, wherein said receiver communication devices adjust the respective detection times by the respective timing differences between the respective local time reference frames and the time reference frame of the reference communication device.

84. The system of claim 76, wherein said receiver communication devices adjust the respective local time reference frames by the respective timing differences to synchronize the respective local time reference frames with the common time reference frame.

85. The system of claim 76, wherein said receiver communication devices account for the respective timing differences between the respective local time reference frames and the time reference frame of the reference communication device upon detection of an emitted signal.

86. The system of claim 85, wherein said receiver communication devices synchronize the respective detection times with the common time reference frame each time an emitted signal is detected.

87. The system of claim 85, wherein said receiver communication devices account for the respective timing differences when a predetermined period of time has elapsed since respective receiver communication devices last accounted for the respective timing differences.

88. The system of claim 76, wherein said receiver communication devices account for the respective timing differences when an estimate accuracy of the respective local time reference frames is worse than a predetermined value.

89. The system of claim 76, wherein said receiver communication devices periodically synchronize the respective local time reference frames with the time reference frame of the reference communication device.

90. The system of claim 76, wherein the frequency with which said receiver communication devices account for the respective timing differences is a function of a level of activity in a communication network used to exchange signals between the receiver communication devices and the reference communication device.

91. The system of claim 76, wherein the receiver communication devices include low accuracy clocks that maintain the respective local time reference frames.

92. The system of claim 76, wherein at least three receiver communication devices detect the emitted signal.

93. The system of claim 76, wherein said processor determines the position of the emitter using trilateration.

94. The system of claim 76, wherein said processor is coupled to one of the receiver communication devices.

95. The system of claim 76, wherein said processor is coupled to the reference communication device.

96. The system of claim 76, wherein the reference communication device is one of the receiver communication devices.

97. The system of claim 76, wherein at least some of the receiver communication devices are mobile.

98. The system of claim 76, wherein the reference communication device is mobile.

99. The system of claim 76, wherein the receiver communication devices are handheld radios.

100. The system of claim 76, wherein the receiver communication devices are wireless telephones.

101. The system of claim 76, wherein the receiver communication devices operate onboard a moving vehicle.

102. A system for determining the position of an emitter, comprising:

means for detecting an emitted signal from the emitter at plural known locations, said means for detecting determining respective detection times of the emitted signal at the plural known locations in respective local time reference frames;

means for determining respective timing differences between the respective local time reference frames and a common time reference frame;

means for accounting for the respective timing differences between the respective local time reference frames and the common time reference frame such that the respective detection times are determined in the common time reference frame; and

means for determining a position of the emitter from the plural known locations and the respective detection times of the emitted signal.